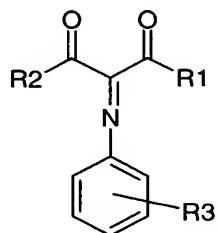


WHAT IS CLAIMED IS:

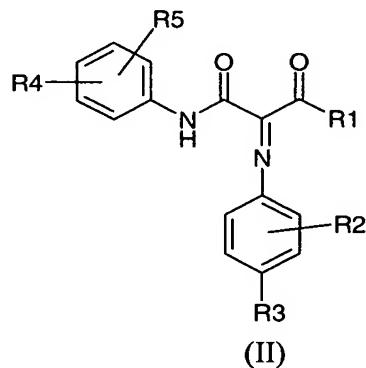
1. A coating composition for making a protein microarray, the composition comprising a gelling agent or a precursor to a gelling agent and microspheres; the microspheres containing a dye represented by Formula (I):



(I)

wherein: R1 and R2 independently represent substituted or unsubstituted alkyl, aryl, carbocyclic ring, heterocyclic ring, or amino; and R3 represents H, alkylamino, dialkylamino, hydroxy, or alkoxy.

2. The coating composition according to claim 1 wherein the microspheres contain a dye represented by Formula (II):



wherein: R1 is substituted or unsubstituted alkyl, aryl, carbocyclic ring, heterocyclic ring, or amino;

R2 is one or more substituents selected from H, alkyl, aryl, or heteroaryl;

R3 is alkylamino, dialkylamino, or hydroxy;

R4 is one or more substituents selected from alkyl or substituted alkyl, acyl or substituted acyl, amido or substituted amido, substituted sulfonyl, substituted sulfamoyl, nitro, aryl or substituted aryl, or heteroaryl or substituted heteroaryl; and

R5 must be one or more substituents selected from the halogen group of Cl, Br, or I.

3. The coating composition according to claim 2 wherein:

R1 = substituted or unsubstituted alkyl;

R2 = H, or substituted or unsubstituted alkyl;

R3 = Disubstituted amino;

R4 = one or more substituents selected from alkyl or substituted alkyl, acyl or substituted acyl, amido or substituted amido, substituted sulfonyl, substituted sulfamoyl, nitro, aryl or substituted aryl, or heteroaryl or substituted heteroaryl; and

R5 = one or more Cl.

4. The coating composition according to claim 1 wherein the gelling agent is gelatin.

5. The coating composition according to claim 1 wherein the gelling agent undergoes thermal gelation.

6. The coating composition according to claim 4 wherein the gelatin is alkali pretreated gelatin.

7. The coating composition according to claim 1 wherein the microspheres have a mean diameter between 1 and 50 microns.

8. The coating composition according to claim 1 wherein the microspheres have a mean diameter between 3 and 30 microns.

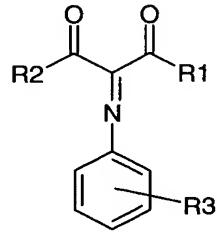
9. The coating composition according to claim 1 wherein the microspheres have a mean diameter between 5 and 20 microns.

10. The coating composition according to claim 1 wherein the microspheres comprise a synthetic or natural polymeric material.

11. The coating composition according to claim 10 wherein the polymeric material is an amorphous polymer.

12. The coating composition according to claim 11 wherein the amorphous polymer is polystyrene.

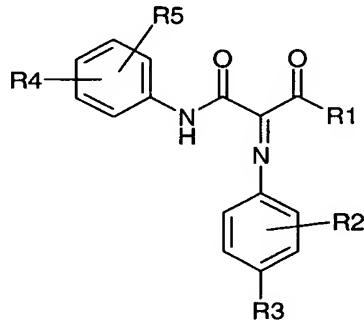
13. A microarray comprising:
a substrate coated with a composition comprising
a gelling agent or a precursor to a gelling agent and microspheres;
the microspheres containing a dye represented by Formula (I):



(I)

wherein: R1 and R2 independently represent substituted or unsubstituted alkyl, aryl, carbocyclic ring, heterocyclic ring, or amino; and R3 represents H, alkylamino, dialkylamino, hydroxy, or alkoxy;
wherein the microspheres are immobilized on the substrate.

14. The microarray according to claim 13 wherein the microspheres contain a dye represented by Formula (II):



wherein: R1 is substituted or unsubstituted alkyl, aryl, carbocyclic ring, heterocyclic ring, or amino;

R2 is one or more substituents selected from H, alkyl, aryl, or heteroaryl;

R3 is alkylamino, dialkylamino, or hydroxy;

R4 is one or more substituents selected from alkyl or substituted alkyl, acyl or substituted acyl, amido or substituted amido, substituted sulfonyl, substituted sulfamoyl, nitro, aryl or substituted aryl, or heteroaryl or substituted heteroaryl; and

R5 must be one or more substituents selected from the halogen group of Cl, Br, or I.

15. The microarray according to claim 14 wherein:

R1 = substituted or unsubstituted alkyl;

R2 = H, or substituted or unsubstituted alkyl;

R3 = Disubstituted amino;

R4 = one or more substituents selected from alkyl or substituted alkyl, acyl or substituted acyl, amido or substituted amido, substituted sulfonyl, substituted sulfamoyl, nitro, aryl or substituted aryl, or heteroaryl or substituted heteroaryl; and

R5 = one or more Cl.

16. The microarray according to claim 13 wherein the gelling agent is gelatin.

17. The microarray according to claim 13 wherein the substrate comprises glass, plastic, cellulose acetate, or polyethyleneterephthalate.

18. The microarray according to claim 13 wherein the substrate is flexible.

19. The microarray according to claim 13 wherein the microspheres are immobilized on the substrate in a concentration between 100 and 1 million microspheres per cm².

20. The microarray according to claim 13 wherein the microspheres are immobilized on the substrate in a concentration between 1000 and 200,000 microspheres per cm².

21. The microarray according to claim 13 wherein the microspheres are immobilized on the substrate in a concentration between 10,000 and 100,000 microspheres per cm².

22. The microarray according to claim 13 wherein the microspheres are immobilized on the substrate upon gelation of the gelling agent.

23. The microarray according to claim 13 wherein the microspheres carry surface active sites.

24. The microarray according to claim 23 wherein the surface active sites carry organic or inorganic attachments.

25. The coating composition according to claim 23 wherein the surface active sites are capable of chemical or physical interaction.

26. The microarray according to claim 23 wherein the surface active sites are bioactive.

27. The microarray according to claim 26 wherein the bioactive sites interact with nucleic acid, protein, or fragments thereof.

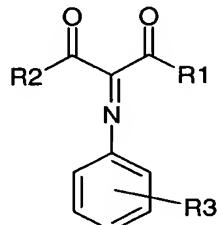
28. The microarray of claim 13 wherein the microspheres are randomly distributed on the substrate.

29. The microarray of claim 13 wherein the substrate is characterized by an absence of specific sites capable of interacting physically or chemically with the microspheres.

30. A method of making a microarray comprising the steps of:
--providing a substrate; and
--coating on the substrate the composition according to claim 1;
wherein said composition is fluid during coating and the microspheres become immobilized in the plane of the coating due to sol-gel transition.

31. The method of claim 29 wherein the microspheres become randomly immobilized on the substrate.

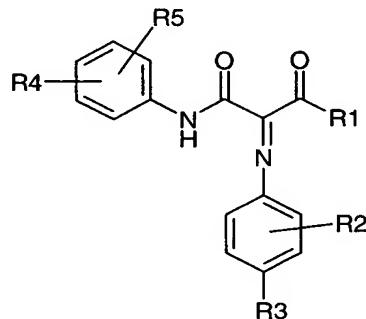
32. A microsphere for making an array, the microsphere comprising a capsule containing a dye represented by Formula (I):



(I)

wherein: R1 and R2 independently represent substituted or unsubstituted alkyl, aryl, carbocyclic ring, heterocyclic ring, or amino; and R3 represents H, alkylamino, dialkylamino, hydroxy, or alkoxy.

33. A microsphere for making an array, the microsphere comprising a capsule containing a dye represented by Formula (II):



(II)

wherein: R1 is substituted or unsubstituted alkyl, aryl, carbocyclic ring, heterocyclic ring, or amino;

R2 is one or more substituents selected from H, alkyl, aryl, or heteroaryl;

R3 is alkylamino, dialkylamino, or hydroxy;

R4 is one or more substituents selected from alkyl or substituted alkyl, acyl or substituted acyl, amido or substituted amido, substituted sulfonyl, substituted sulfamoyl, nitro, aryl or substituted aryl, or heteroaryl or substituted heteroaryl; and

R5 must be one or more substituents selected from the halogen group of Cl, Br, or I.

34. The microsphere according to claim 33 wherein:

R1 = substituted or unsubstituted alkyl;

R2 = H, or substituted or unsubstituted alkyl;

R3 = Disubstituted amino;

R4 = one or more substituents selected from alkyl or substituted alkyl, acyl or substituted acyl, amido or substituted amido, substituted sulfonyl, substituted sulfamoyl, nitro, aryl or substituted aryl, or heteroaryl or substituted heteroaryl; and

R5 = one or more Cl.